Claims:

1. A processing chamber, comprising:

a) a chamber body having a substrate support member disposed therein;

b) a chamber cover, comprising:

i) a retaining ring; and

ii) a lid, comprising:

a) a first plate and a second plate sealably connected together and defining a fluid channel at least partially therebetween: and

b) a fluid inlet and outlet fluidly connected to the fluid channel.

2. The processing chamber of claim 1, wherein the lid is connected to the retaining ring by one or more feedthroughs.

3. The processing chamber of claim 2, wherein the one or more feedthroughs enable fluid flow into and out of the fluid inlet and fluid outlet.

4. The substrate processing system of claim 1, wherein the lid further comprises one or more feedthrough pockets in which the one or more feedthroughs are received to connect the lid to the retaining ring.

5. The substrate processing system of claim 4, wherein the one or more feedthroughs comprise an enlarged engagement portion insertable into the one or more feedthrough pockets.

6. The substrate processing system of claim 5, wherein the one or more feedthrough pockets comprise a pocket shoulder to receive a sealing element therein.

7. The substrate processing system of claim 6, further comprising a fastener adapted to attach the feedthrough to the retaining ring.

8. The substrate processing system of claim 7, wherein the retaining ring defines one or

more fluid passages and one or more feedthrough channels fluidly connected to the fluid passages.

9. The substrate processing system of claim 4, wherein the feedthrough comprises a channel along its length and one or more ports connected to the channel.

10. The substrate processing system of claim 8, wherein the retaining ring comprises a pocket alignment shoulder adapted to align the lid to the retaining ring.

11. The substrate processing system of claim 1, wherein the first and second plates each comprise a portion of the fluid channel.

12. The substrate processing system of claim 11, wherein the fluid channel is continuous between the inlet and the outlet.

13. The substrate processing system of claim 12, further comprising a feedthrough pocket fluidly connected to the lid passageway and adapted to connect to a feedthrough to secure the lid to the retaining ring.

14. The substrate processing system of claim 13, wherein the passageway forms a circuitous pattern substantially throughout the lid.

15. The substrate processing system of claim 14, wherein the passageway surface area comprises at least about 35% of the surface area of the lid.

16. The substrate processing system of claim 15, wherein the lid is an energy transparent window or an electrode.

17. The substrate processing system of claim 16, wherein the energy transparent window or electrode are made of a material selected from the group comprising aluminum oxide, aluminum nitride, silicon carbide, silicon, polysilicon and combinations thereof.

18. A temperature controllable lid for a processing system, comprising:

a) a first plate sealably connected to a second plate;

b) at least one channel formed between the first and second plates; and

c) one or more inlets and one or more outlets connected to the channel.

19. The lid of claim 18 wherein the first and second plates each comprise a portion of the temperature control passageway.

20. The lid of claim 18, wherein the temperature control passageway is continuous between an inlet and outlet.

21. The lid of claim 18, wherein the passageway is disposed over about 35% of the surface area of the lid.

22. The lid of claim 18, wherein the lid comprises at least one feedthrough pocket in fluid communication with the passageway and a feedthrough disposed in the feedthrough pocket.

23. The lid of claim 22, wherein the feedthrough pocket comprises a pocket shoulder and a sealing element circumferentially disposed around the feedthrough in proximity to the pocket shoulder.

24. The lid of claim 23, wherein the feedthrough comprises an enlarged engagement portion adapted to be inserted into the feedthrough pocket.

25. The lid of claim 24 wherein the plates define two or more channels, each channel connected to at least one inlet and one outlet.

26. The lid of claim 18 wherein the plates are comprised of a material selected from the group comprising aluminum oxide, aluminum nitride, silicon carbide, silicon, polysilicon and combinations thereof.

27. The lid of claim 18 wherein at least one of the plates is made of a metal.

28. The lid of claim 27 wherein another of the plates is made of a material selected from the group comprising aluminum oxide, aluminum nitride, silicon carbide, silicon, polysilicon and combinations thereof.

29. A processing chamber, comprising:

an enclosure having a first electrode for supporting a substrate in the enclosure; and

a second electrode opposed to the first electrode, the second electrode comprising:

a first plate having a first surface disposed at least partially in the enclosure and a second surface connected to a support frame;

one or more channels disposed at least partially in the first plate; and

one or more fluid connectors fluidly connected to the one or more channels.

30. The processing system of claim 29 further comprising a power source connected to the second electrode.

31. The processing chamber of claim 29 wherein the first plate is comprised of a material selected from the group consisting of graphite, polycrystalline silicon, quartz, glassy carbon, single crystal silicon, pyrolytic graphite, silicon carbide, alumina, zirconium, diamond coated materials, titanium oxide or combinations thereof.

32. The processing system of claim 29 wherein the first plate is comprised of a metal.

33. The processing chamber of claim 29 further comprising a backing plate adjacent a sidewall of the first plate opposite the first electrode.

34. The processing system of claim 33 wherein the backing plate is comprised of a metal and the first plate is comprised of a material selected from the group consisting of graphite, polycrystalline silicon, quartz, glassy carbon, single crystal silicon, pyrolytic graphite, silicon

carbide, alumina, zirconium, diamond coated materials, titanium oxide or combinations thereof.

35. An electrode assembly for use in a wall of a processing chamber, comprising:

an electrode having a substantially uniform thickness and defining one or more fluid channels at least partially therethrough; and

a support frame connected at least partially to one surface of the electrode.

36. The electrode assembly of claim 35 wherein the electrode is comprised of a plate and the plate defines one or more apertures therethrough.

37. The electrode assembly of claim 36 further comprising a backing plate supporting the electrode.

38. The electrode assembly of claim 35 wherein the electrode is comprised of a material selected from the group consisting of graphite, polycrystalline silicon, quartz, glassy carbon, single crystal silicon, pyrolytic graphite, silicon carbide, alumina, zirconium, diamond coated materials, titanium oxide or combinations thereof.

39. The electrode assembly of claim 35 wherein the electrode is comprised of a metal.

40. The electrode assembly of claim 35 wherein the electrode comprises a coating of graphite, polycrystalline silicon, quartz, glassy carbon, single crystal silicon, pyrolytic graphite, silicon carbide, alumina, zirconium, diamond coated materials, titanium oxide or combinations thereof formed thereon.

41. A plasma chamber for processing a workpiece, comprising:

a workpiece support; and

a chamber cover facing said workpiece support, the chamber cover comprising:

a first plate;

a second plate sealably engaged with the first plate; and

at least one fluid channel defined within said chamber cover and defining one or more fluid pathways distributed generally over the area of the chamber cover.

42. The plasma chamber of claim 41 wherein the fluid channel is disposed at least partially between the first and second plates.

43. The plasma chamber of claim 42 wherein the channel is partially formed between the first and second plates.

44. The plasma chamber of claim 42 wherein the channel is defined by a groove in one of the plates and the generally smooth opposing face of the other plate.

45. The plasma chamber of claim 42 wherein the channel is defined by grooves formed in both the first and second plates.

46. The plasma chamber of claim 41 wherein the one or more fluid pathways are arcuate, radial, meandering or combinations thereof.

47. The plasma chamber of claim 41 wherein the chamber cover is comprised of a dielectric material, a conductive material, a semiconductive material, or combinations thereof.

48. The plasma chamber of claim 41 wherein one plate is comprised of one material and the other plate is comprised of another material.

49. The plasma chamber of claim 47 wherein the plate facing the workpiece support is comprised of a silicon containing material.

50. The plasma chamber of claim 47 wherein at least one plate is comprised of a metal or alloy thereof.

51. The plasma chamber of claim 47 wherein at least one plate is comprised of aluminum oxide or aluminum nitride.

52. The plasma chamber of claim 41 wherein the chamber cover comprises a conductive or semiconductive electrode.

53. The plasma chamber of claim 41 wherein the chamber cover is dielectric or semiconductive and is transmissive to RF energy.

54. The plasma chamber of claim 41 wherein the chamber cover comprises a window transmissive to RF energy, and which further comprises an antenna disposed adjacent to the chamber cover to couple RF energy through the window and into the chamber.

55. The plasma chamber of claim 54 wherein the window is an electrode.

56. The plasma chamber of claim 52 wherein a dielectric fluid is circulated through the fluid channel.

57. A plasma processing chamber, comprising:

a substrate support;

an antenna to inductively couple RF energy into the chamber to energize one or more processing gases within the chamber into a plasma; and

a window comprising a wall of the chamber between the antenna and the substrate support, the window being transmissive to RF energy radiated by the antenna into the chamber and defining one or more interior fluid channels disposed generally throughout the window and capable of supporting a fluid flow therethrough.

58. The plasma chamber of claim 57 wherein the window comprises facing first and second members, at least one of the facing members defining a groove therein comprising at least a portion of the interior fluid channel, the facing members being sealingly engaged with each other.

59. The plasma chamber of claim 58 wherein the fluid channel is disposed at least partially between the facing members.

60. The plasma chamber of claim 58 wherein the other of the facing members defines a generally smooth surface which in conjunction with the groove defines the channel.

61. The plasma chamber of claim 57 wherein the channel follows a circuitous path.

62. The plasma chamber of claim 57 wherein one or more of the fluid channels are distributed generally throughout the area of the window.

63. The plasma chamber of claim 57 wherein the window is comprised of a dielectric or semiconductive material.

64. The plasma chamber of claim 63 wherein at least one of the members is comprised of a silicon containing material.

65. The plasma chamber of claim 64 wherein at least one of the members is comprised of silicon.

66. The plasma chamber of claim 64 wherein at least one of the members is comprised of silicon carbide.

67. The plasma chamber of claim 57 wherein the window is comprised of aluminum oxide or silicon nitride.

68. The plasma chamber of claim 57 wherein the window is comprised of at least one of silicon or silicon nitride.

69. The plasma chamber of claim 57 wherein dielectric fluid is flowed through the

channel.

70. The plasma chamber of claim 57 wherein the window comprises an electrode.